After centrifugation, there is exerted a pressure on the inner bag portion 52, whereby the content thereof is transferred via an outlet tube 55 to the inner portion at one side thereof and then, along the entire periphery of the outer bag portion to the other end thereof and then to a storage bag. Thus, the outer bag portion 53 operates as a cell trap.

In Fig. 6 there is shown an insert 60 for retaining the bag assembly 50 according to Fig. 5 in position. The different portions of the bag assembly are attached to the insert via adhesive pads 61 as shown to the left in the figure. As appears from Figs. 5 and 6, the different portions of the bag assembly are manufactured in one step from two or three sheets of plastic material and provided with separation and sealing weldings at desired positions in one and the same step. Thus, the bag assembly is very inexpensive to manufacture. The bag assembly is then divided in its separate parts and mounted to an insert to maintain integrity during subsequent transport and handling.

The insert is placed in a centrifuge rotor 70 as shown in Fig. 7. The operation of the centrifuge is similar to that described above, and need not be further described. However, the annular processing bag has an inclination in another direction compared to Fig. 3 as is evident from Fig. 7.

Turning back to Fig. 5, there is shown by broken lines 56 that the outer periphery of the outer bag portion 53 can be provided with a sinuous outer borderline. This borderline will generate spaces 57 with stagnant flow, where more dense cells can accumulate. Once trapped in such a space 57, the heavier cells, leucocytes, will remain therein, while the lighter cells, platelets, will follow the flow of plasma. Generally, leucocytes have a tendency to attach to the wall surface of the plastic material, which further aids the separation. It is of importance that the radially inner borderline of the outer bag portion 53 is smooth and has no discontinuities, so that the flow of plasma and platelets can take place without any hindrance.

The cell trap according to the invention can also be arranged without any peripheral portion and only use the feature that the flow in the outlet tube 3 first is radially outwards and then changes

the direction 180° and continues radially inwards. The heavier cells, leukocytes, will have difficulty to follow such a change of direction and the lighter cells, platelets, will follow the flow. Thus, a separation will take place. Such an embodiment can be obtained from Fig. 4 by combining chambers 41 and 43 to a single chamber and excluding the peripheral tube 34, 39 etc.

Another more elaborate embodiment is shown in Fig. 8. The bag assembly 80 comprises a nearly annular processing bag 81, an outlet tube 83 and a platelet storage bag 84. The cell trap according to the invention comprises a first radial tube portion 85 followed by a chamber 86 and ended by a connection tube 87 to the platelet storage bag 84. The chamber 86 is made from the material between the ends of the nearly annular processing bag 81 as appears from Fig. 8. To the left of the symmetry line is shown a triangular shape 89 and to the right of the symmetry line is shown a more rectangular shape 88. Preferably, the chamber 86 is symmetrical.

In Fig. 9 there is shown a centrifuge rotor 90 provided with the bag assembly 80 of Fig. 8 arranged at an insert 82. As in the embodiment of Fig. 2, the rotor cover is made up of two separate portions 91 and 92. Between the two portions 91 and 92, there is arranged a recess 93 suitable for enclosing the chamber 86, as shown in Fig. 10A, where the chamber 86 is placed in position in the recess in an empty, collapsed condition. As appears from Fig. 9, the recess 93 has a complementary shape to the chamber 86, so that, when the chamber 86 is filled with liquid, the recess 93 supports the chamber, as shown in Fig. 10B.

The operation of the embodiment according to Fig. 8 and 9 is similar to the previous embodiments. The buffy coat is introduced in the processing bag 81 and the bag assembly 80 is placed inside the rotor centrifuge in an annular chamber 94, and the separation process is performed. After separation, a magnetic valve 95 opens the outlet tube 83 and the separated fraction is given off via the outlet tube 83 to the end of chamber 86 via the radial tube portion 85. Then, the fraction flows radially inward through chamber 86 under the influence of a G-field while the rotor is still rotating. The more dense cells are separated and the less dense cells follow the fraction and are given off to the storage bag 84.

The rotor cover portions 91 and 92 are provided with guide pins 97 and corresponding holes so that the mutual relationship between the two portions are always obtained. This will ensure that the recess 93 will always be formed between the two cover portions.

The upper walls of the chamber 86 (seen according to Fig. 8) are preferably inclined as shown in Fig. 8 to form a funnel-like outlet portion.

As appears from Fig. 9, outlet tube 83 and connection tube 87 are placed in a recess 96 in one of the cover portions 91 at the periphery thereof.

As is clear from the above description, the bag assembly 80 is placed in an insert 82 of a shape corresponding to the bag assembly and the rotor construction. Thus, the bag assembly can easily and conveniently be placed in the correct position in the rotor and the cover portions can be placed in position. As previously, the bag assembly is maintained to the insert by adhesive tapes arranged at necessary positions. The tube portions are placed in channels preformed in the insert. The insert is preferably made by a vacuum molding process.

It is possible to use the invention for separating other types of cells, such as stem cells. Stem cells are also included in the buffy coat and will be separated during the centrifugation. In this case, it is necessary to first remove the transparent fraction which essentially includes plasma, platelets and leucocytes. When the fraction turns red, the first light cells are stem cells.

For obtaining stem cells, it is necessary to include two collection bags attached to the outlet or connection tube, one 58 for taking care of the transparent fraction, and one 59 for the stem cell fraction. Moreover, the centrifuge comprises two magnetically operated valves 68, 69 one for each collection bag. The insert and the centrifuge rotor includes a window 67 through which the outlet tube portion connected to the first collection bag 58 is visible. When it is determined that the content of said outlet tube portion becomes red, this is an indication that the stem cell portion has reached this position, and the magnetic valves are reversed so that the outlet flow is directed to the other collection bag 59 for collection of stem cells. The collection continues until a predetermined